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ABSTRACT

This student manual, part of a small-engine repair series on servicing fuel systems, is designed for use by special needs students in Texas. The manual explains in pictures and short sentences, written on a low reading level, the job of servicing two-piece flo-jet carburetors. Along with the steps of this repair job, specific safety and caution information is frequently noted. To reinforce consistency in material presented to the slow learners, the pictures and written words correspond exactly with the pictures and wording on a corresponding audiovisual presentation. A progress chart for rating the students is included in the manual. (KC)

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STUDENT MANUAL 3

FUEL SYSTEM
SMALL ENGINE REPAIR SERIES

SERVICE THE

TWO-PIECE FLO-JET CARBURETOR

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WHAT YOU WILL FIND IN THIS BOOKLET

The point of this booklet ..... Page 1

Tools and equipment for service the two-piece flo-jet carburetor ..... Page 2

Steps for service the two-piece flo-jet carburetor ..... Page 5

Can you service the two-piece flo-jet carburetor? ..... Page 35

THE POINT OF THIS BOOKLET

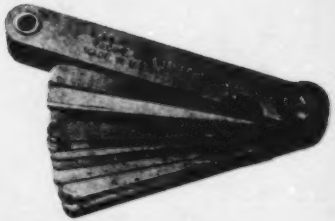
As a small engine mechanic, you may have to service the two-piece flo-jet carburetor on a small gas engine. This booklet will help you learn what tools and equipment to use and all the steps of this job.

As you practice these steps on a real engine, you and your teacher can rate your progress on a chart on pages 36-38. Don't forget to follow the safety and good work habits that you have learned.

TOOLS AND EQUIPMENT:

7/16" open-end wrench

carburetor cleaner and basket



feeler gauge

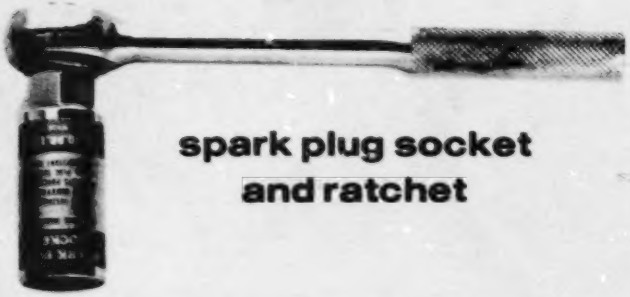
iron bar

cleaning pan with water

straightedge

Phillips screwdriver

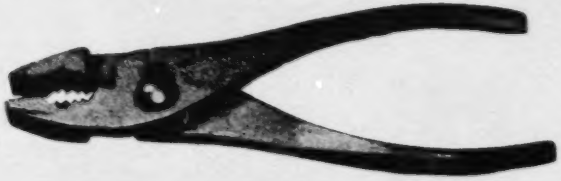
flat-tip screwdriver



spark plug socket
and ratchet

needle nose pliers

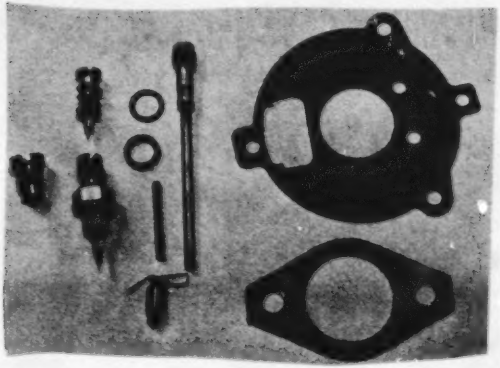
carburetor-jet screwdriver



combination pliers

safety glasses

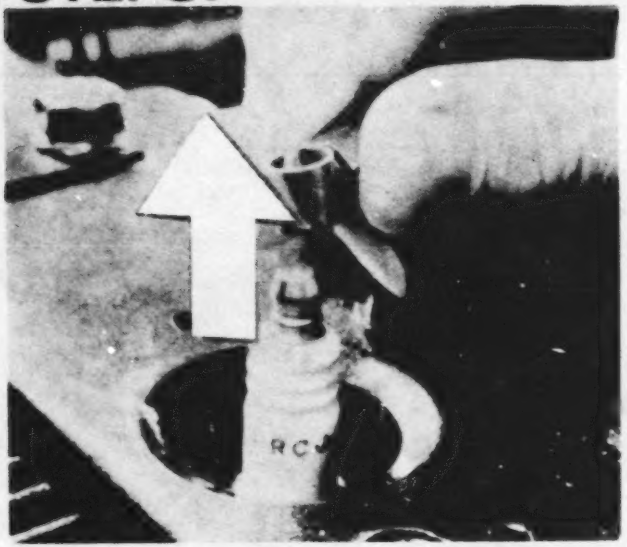
compressed air



carburetor repair kit

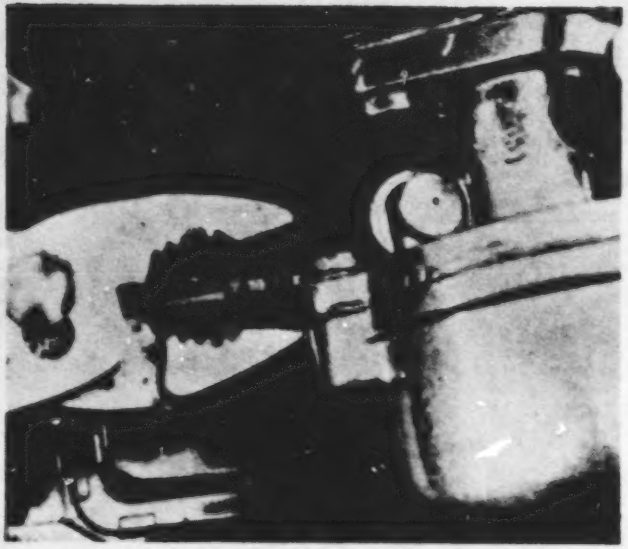
9

STEPS:



1. **Remove the spark plug wire and spark plug.**
   Caution. Use a spark plug socket to remove the spark plug and not some other tool that might damage the plug.

2. **Close the fuel shutoff valve by turning the thumb screw until it is tight. If the throttle cable is connected to the engine, disconnect it.**
   Caution: Don't force the thumb screw too tight because this could damage it.

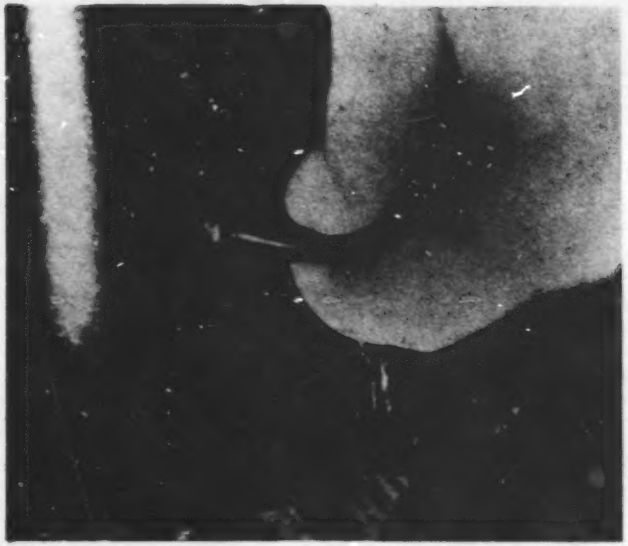


3. **Use pliers to remove the clamp on the fuel hose on the carburetor.**

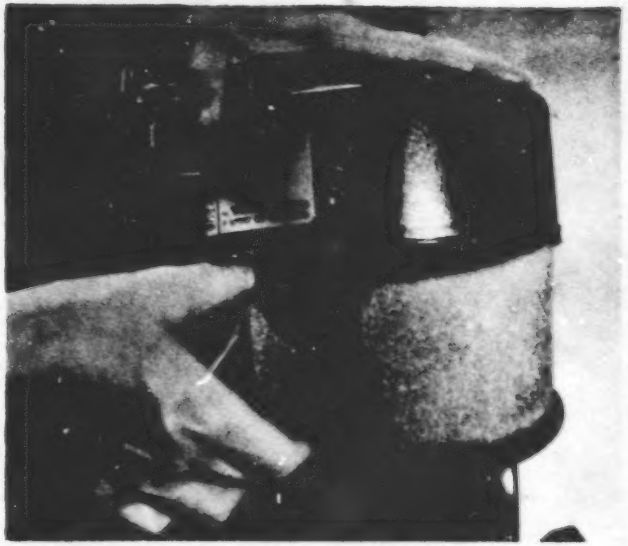
   Note: If available, hose clamp pliers may be used to remove the clamp.

4. **Twist the fuel hose off the carburetor.**

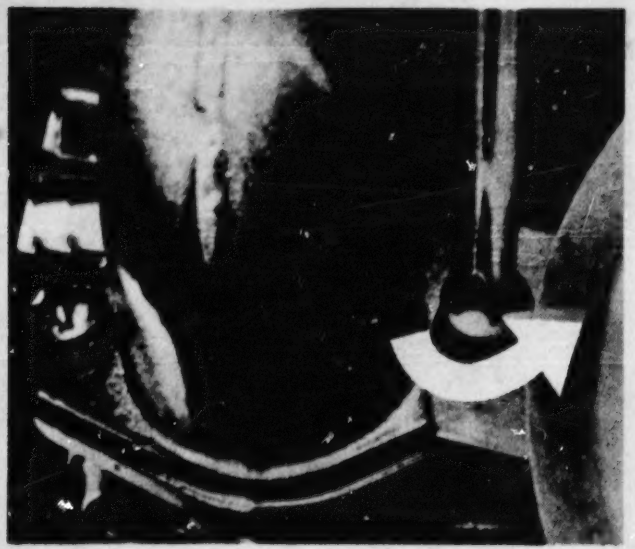
   Note: You may need to twist and pull hard on the hose to loosen it.



5. Gently pull the crankcase breather hose off the air cleaner tube.

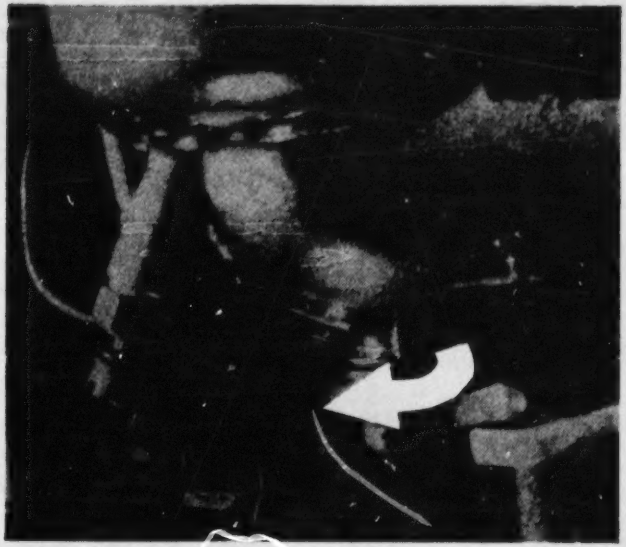


6. Remove the air cleaner wing nut, cover, and foam element. Set these aside.

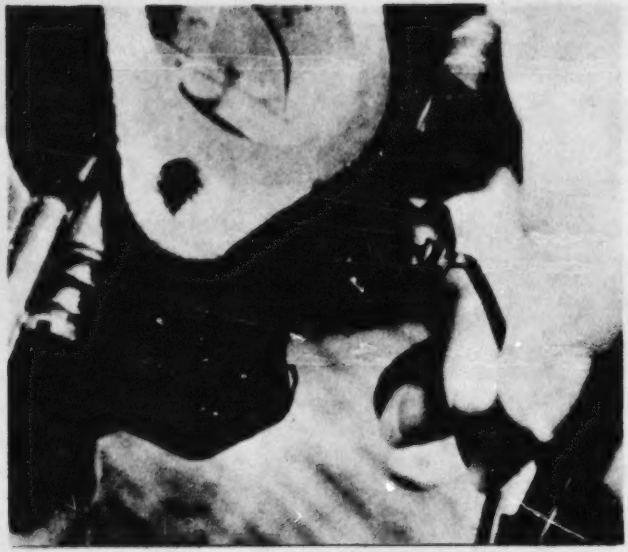


7. Use a large Phillips screwdriver to remove the two screws which join the carburetor to the intake manifold.

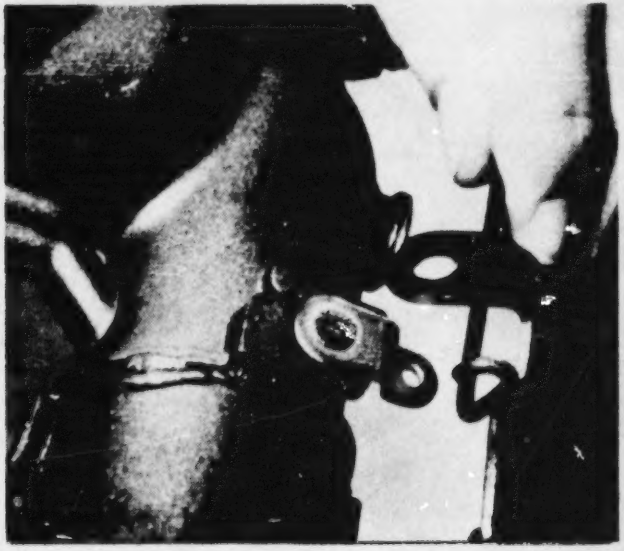
Note: Some engines have a bolt and brace that hold the carburetor and air cleaner together.



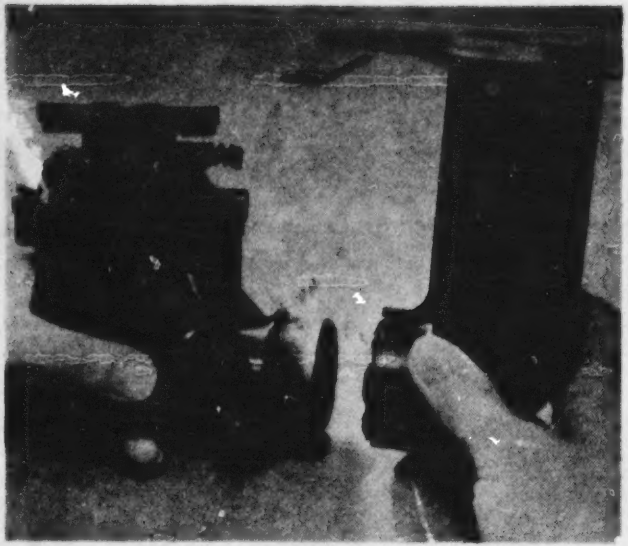
8. Use a 7/16" open-end wrench to remove this bolt and brace.



9. When the carburetor is loose, tilt it toward the engine and unhook the governor link on the throttle shaft.

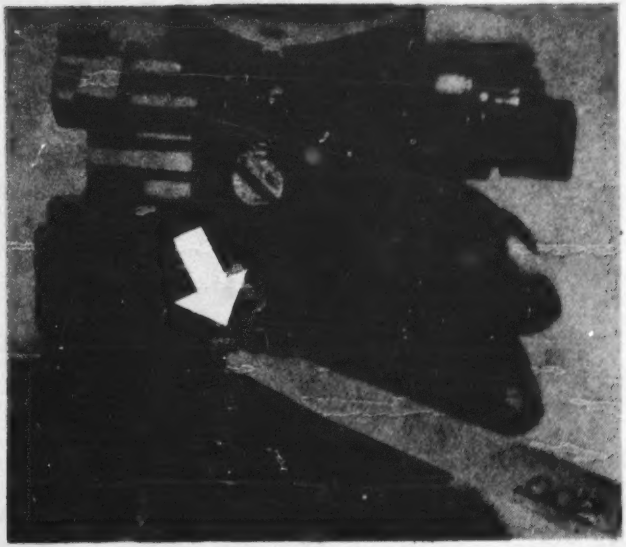


10. Unhook the automatic choke link on the choke valve.



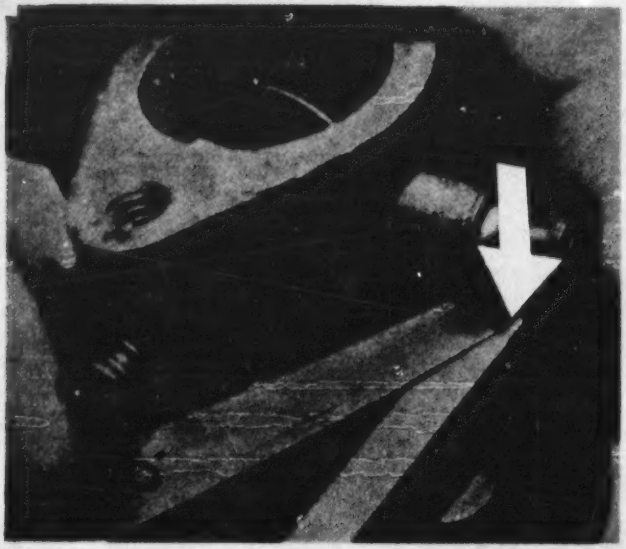
11. Gently pull off the air cleaner tube from the carburetor. Set the carburetor on your work bench.

12. To check the upper carburetor body for warpage, find the space between the upper and lower bodies at the air vent boss, just below the idle valve.

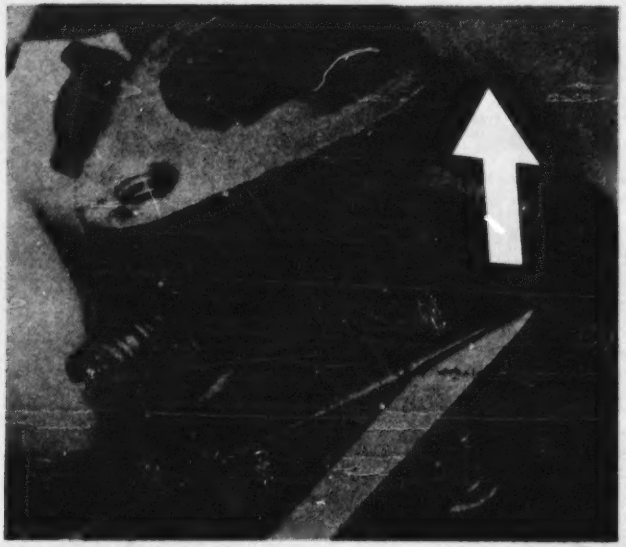


13. Try to fit a .002" feeler gauge into this space.

14. To check the throttle shaft and bushings for wear, place a short iron bar between the throttle shaft and upper carburetor body.



15. Hold the throttle shaft down on the iron bar. Find a feeler gauge in a size that will fit between the shaft and bar. Write down this size.

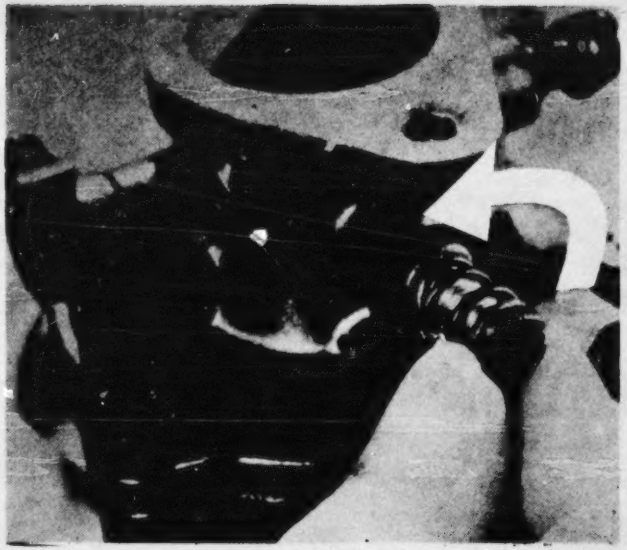


16. Now, hold the throttle shaft up and again find a feeler gauge in a size that will fit between the shaft and bar. Write down this size.

$$\begin{array}{r} .013'' \\ -\ .012'' \\ \hline .001'' \end{array}$$

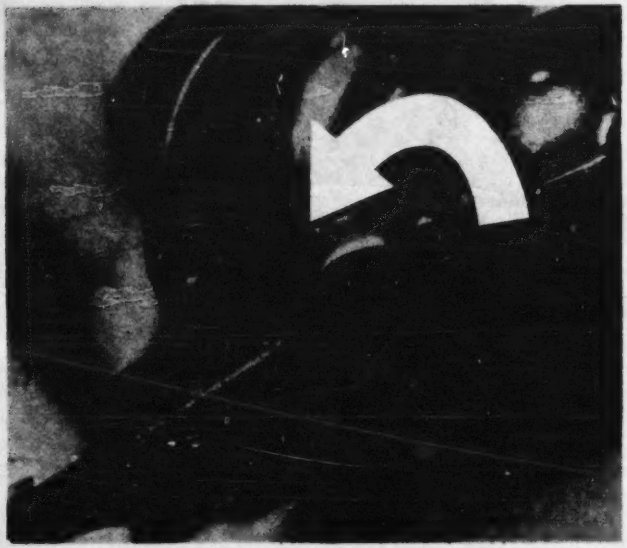
17. Subtract these two sizes. The difference should not be more than .010".

Note: If it is, then either the throttle shaft should be rebushed or the upper carburetor body replaced, or both.

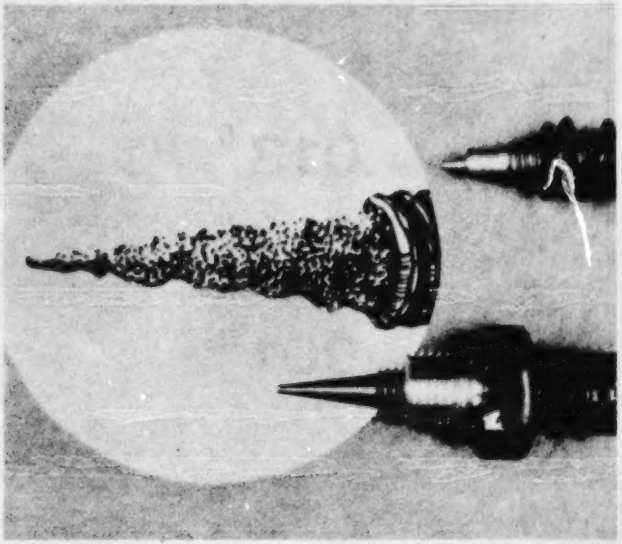


18. To disassemble the carburetor, remove the idle needle valve. Set the idle valve and its spring aside.

18



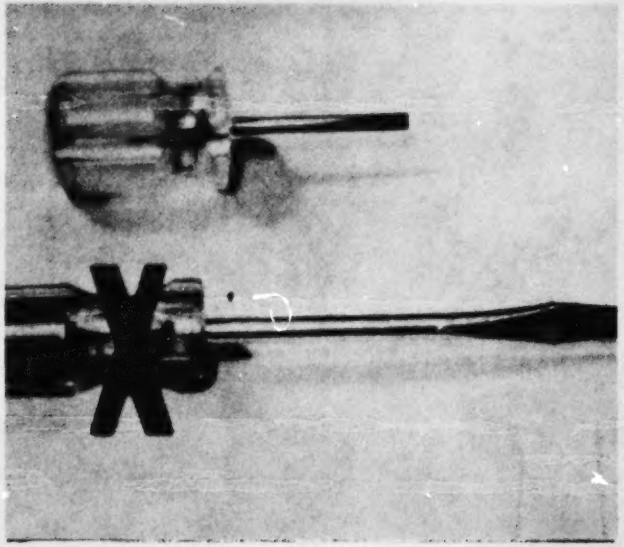
19. **Loosen the packing nut and high speed needle valve with the 7/16" open-end wrench. Remove the packing nut and needle valve together.**



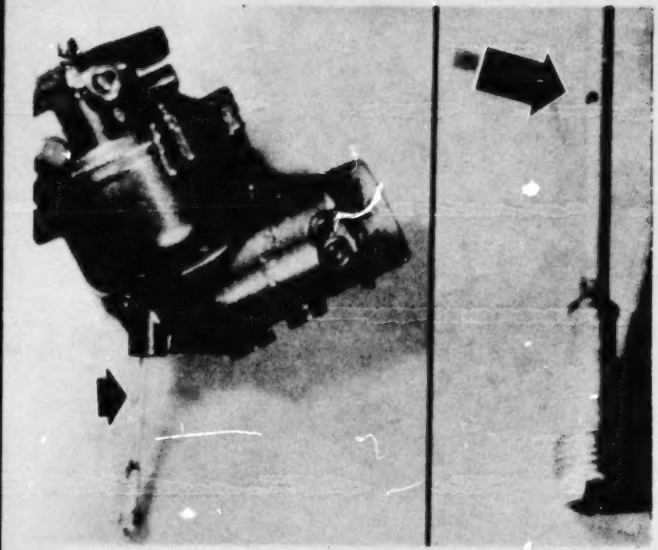
20. **Check the tip ends of the two needle valves for damage and wear.**
Note: If the tip ends have worn thin or have ridges, replace them with new ones.

15

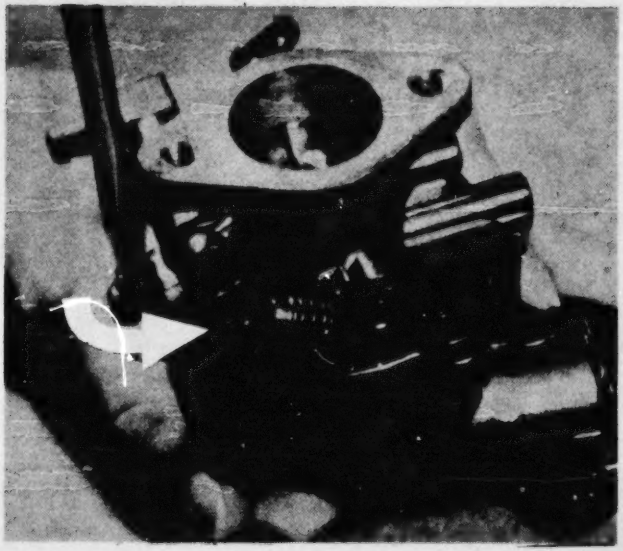
21. **Carefully remove the main fuel nozzle with the carburetor-jet screwdriver. The nozzle is found inside the lower carburetor body where the high speed needle valve is located.**



Caution: Use a carburetor-jet screwdriver, and not a larger screwdriver that could damage the inside threads for the high speed needle valve.



22. Check the fuel nozzle for dirt and damage. Make sure all the holes are open and clear. Set the nozzle aside.

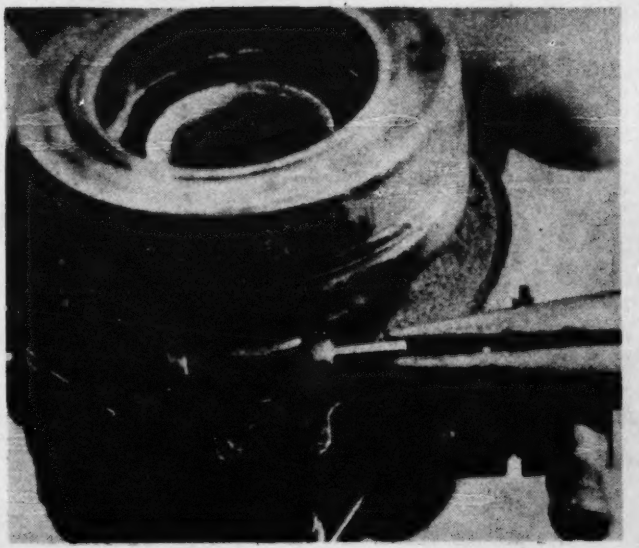


23. Remove the mounting bolts holding the upper and lower carburetor bodies together. Set these bolts and washers aside.

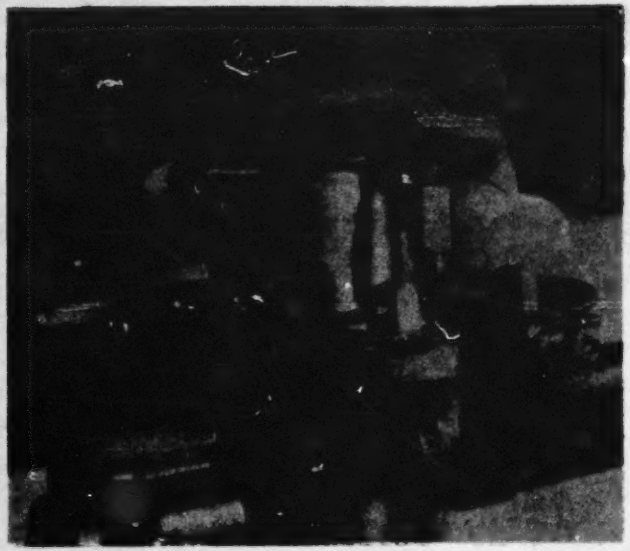
21

24. Gently separate the upper body from the lower body.

Caution: The float hinge pin holding the float in place on the upper body may fall out. Be careful not to drop the float and pin.



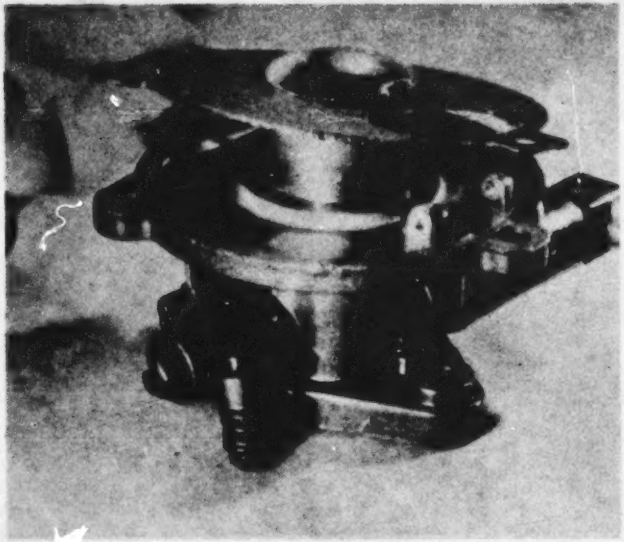
25. If the hinge pin did not fall out, then remove it with the needle nose pliers. Set the lower body aside.



26. Carefully remove the float and float valve. Gently shake the float near your ear to hear if it has gasoline inside it.

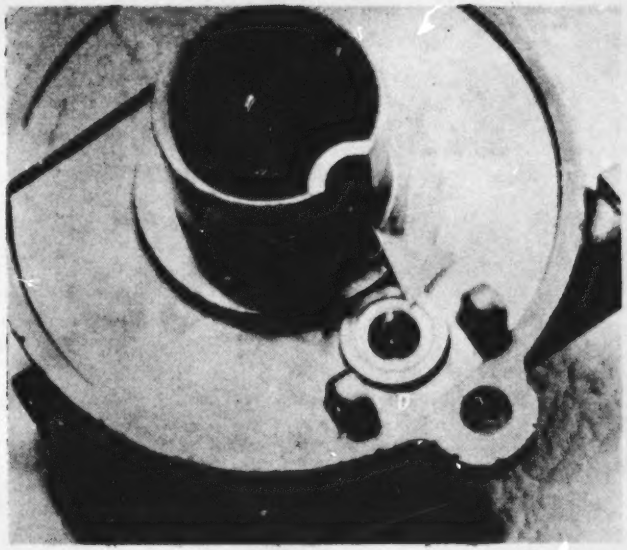
Note: If the float is crushed or it sounds like it has gasoline inside it, it must be replaced with a new one.

27. Remove the float valve by slipping the spring clip off the tang. Put this old float valve in the trash. Connect the new valve onto the float tang. Set them aside.



28. Remove the gasket on the upper carburetor body. Put this in the trash.

Note: You will always want to replace old gaskets with new ones, because old ones may harden and leak.

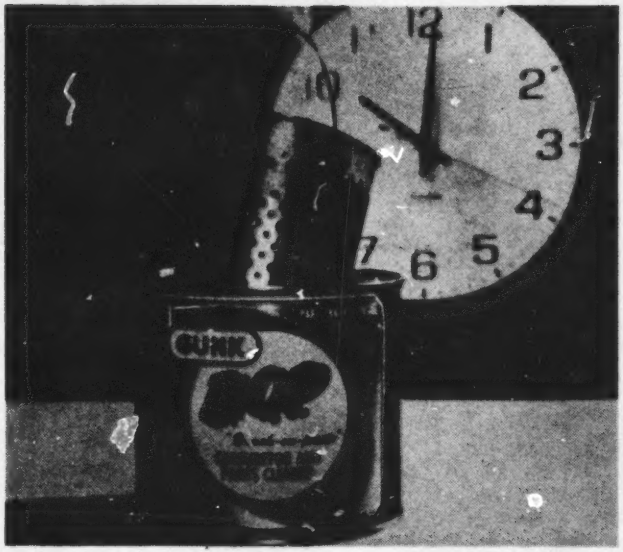


29. Check the float valve seat on the upper carburetor body for damage.

Note: This seat is the pressed-in type and will only need to be replaced if it has nicks or cuts on it, or if the float needle valve is replaced.

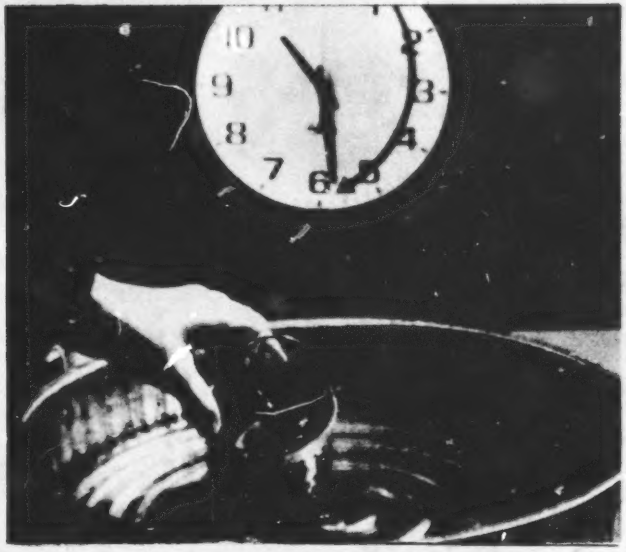
30. Clean the carburetor parts of dirt and buildup. First, place the parts in a carburetor cleaner basket.

Caution: Make sure gaskets, float, and all rubber parts have been removed because the cleaner will make the rubber parts brittle.

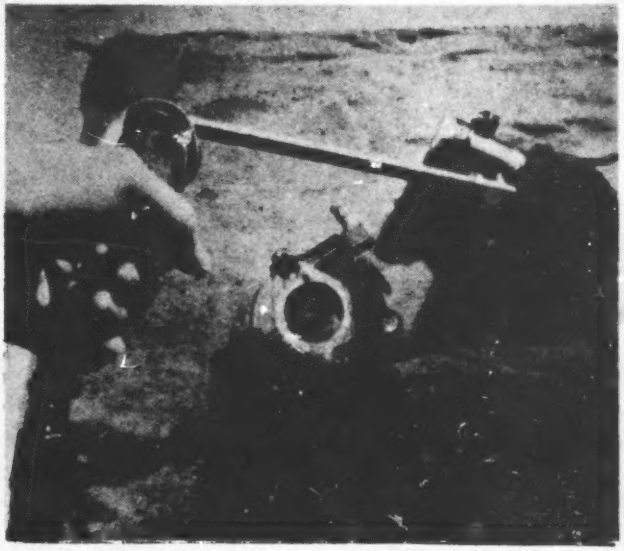


31. Put the basket in the carburetor cleaner and gently move it up and down. Let the parts sit in the cleaner for no more than 30 minutes.

Safety Tip: Carburetor cleaner will hurt you if it gets on your hands or in your eyes.

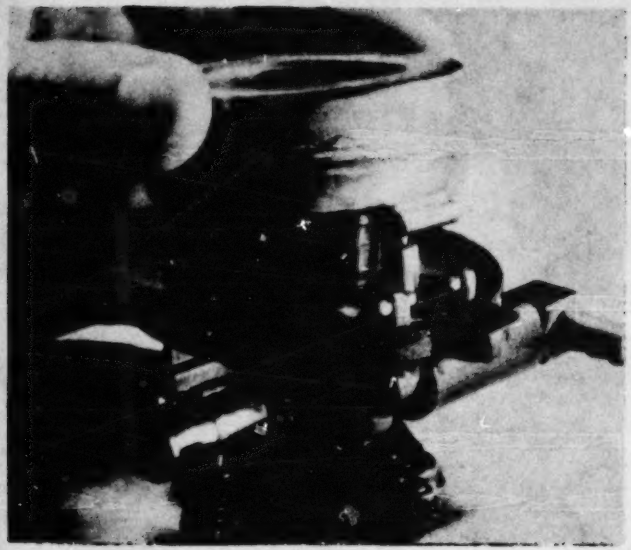


32. When 30 minutes are up, remove the basket from the cleaner. Rinse the parts in the basket thoroughly with water.

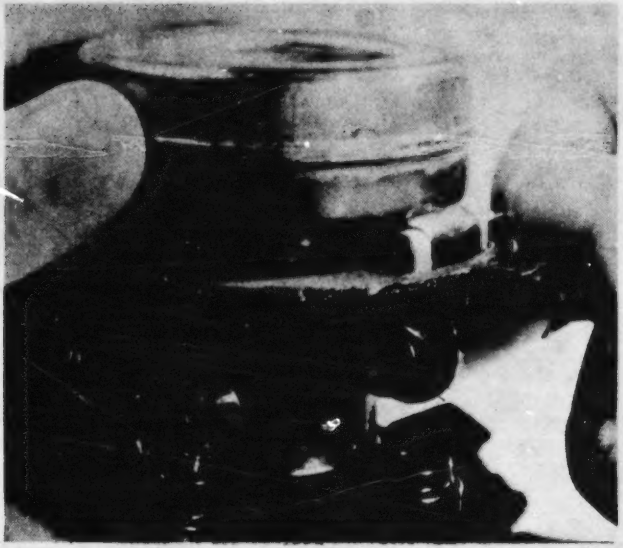


33. Dry the parts, one at a time, with compressed air. Be sure to blow out all the holes in the two carburetor bodies.

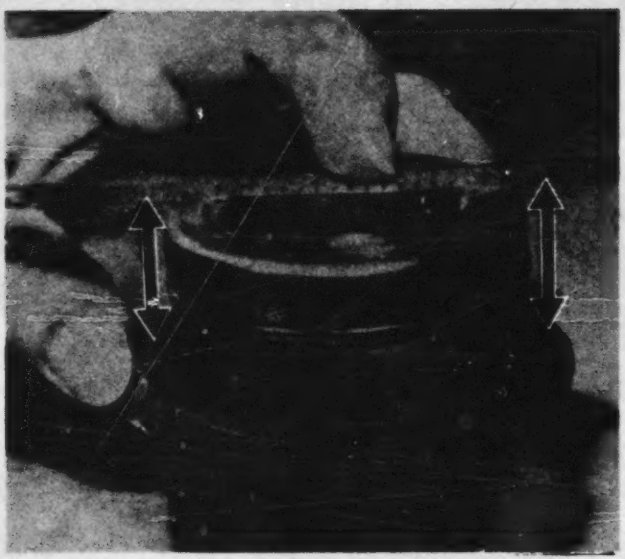
Safety Tip: Remember to wear your safety glasses when using compressed air.



34. **When the parts are dry, put a new carburetor gasket on the upper carburetor body. Carefully place the float and float valve on top of the gasket.**

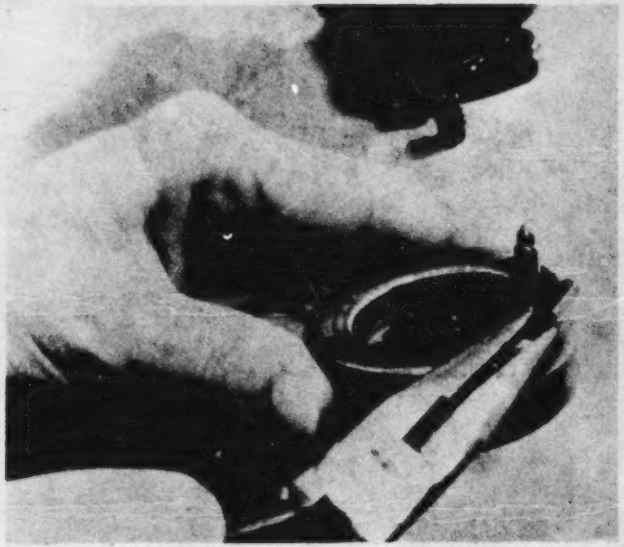


35. **Slightly lift up the float and gently push the float hinge pin through the hinges with your fingers.**
Note: Lifting up the float will help line up the hinges, so that the pin can easily be pushed through.



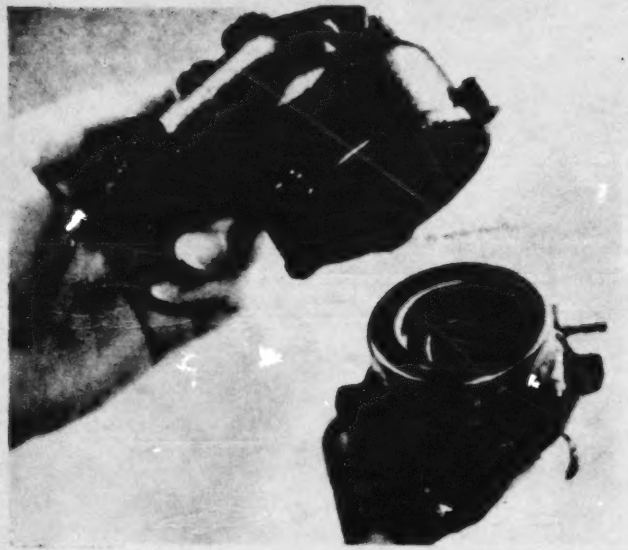
36. To check the float level. Place straightedge across float at hinge to opposite side. Measure the distance between gasket and straightedge on both sides of float.

Note: The distance should be the same on both sides.



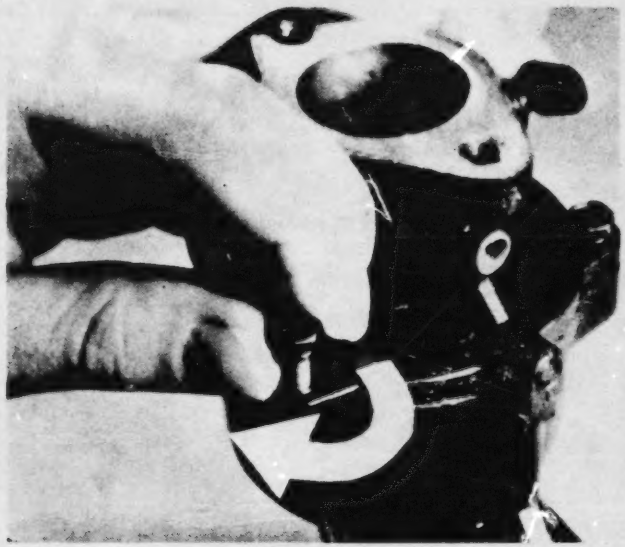
37. If the distance is not the same on both sides, then the float is not parallel to the carburetor. Adjust by bending the float tang until both sides are parallel.

Caution: Do not press on the float to adjust it because it will easily crush.



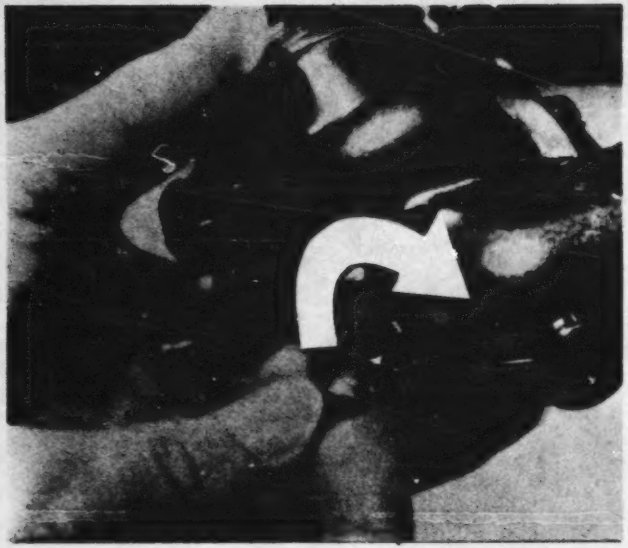
38. To put the carburetor back together, first place the lower carburetor body on the upper carburetor body.

Caution: Be careful not to damage the float.



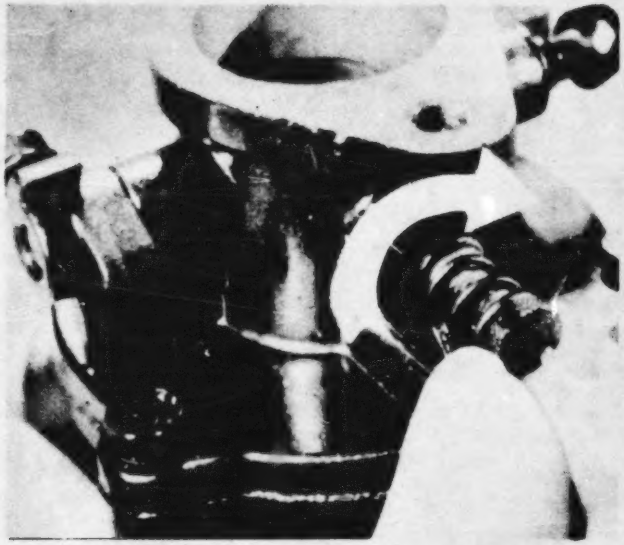
39. Fasten the two bodies together with the mounting bolts.

Note: If the gauge fits, then the upper carburetor body is warped. Replace it with a new one.



40. Replace the main fuel nozzle, using the carburetor-jet screwdriver.

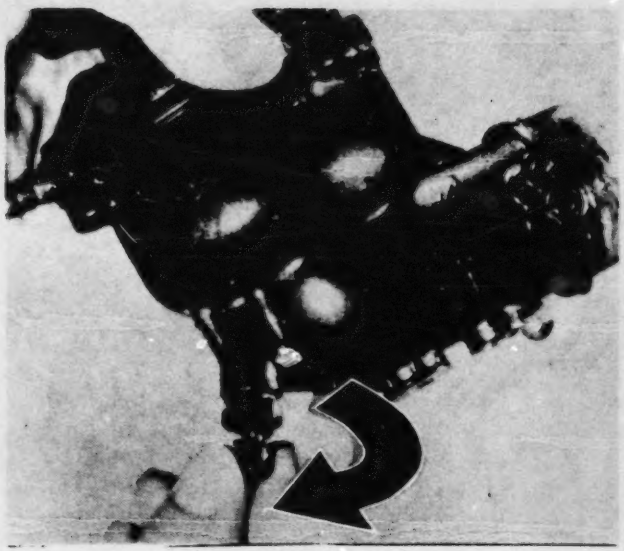
Caution: Use the correct screwdriver because the inside threads could be damaged from using a larger screwdriver.



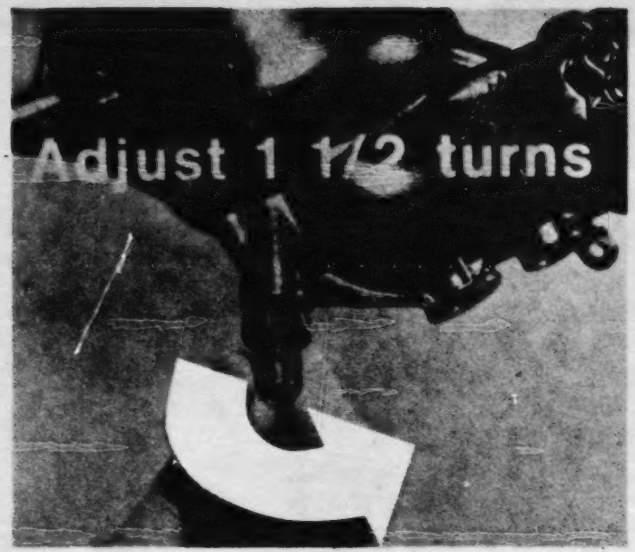
41. Using your fingers only, replace the idle speed needle valve until it is seated.

Caution: Don't overtighten it because the tip end could be damaged.

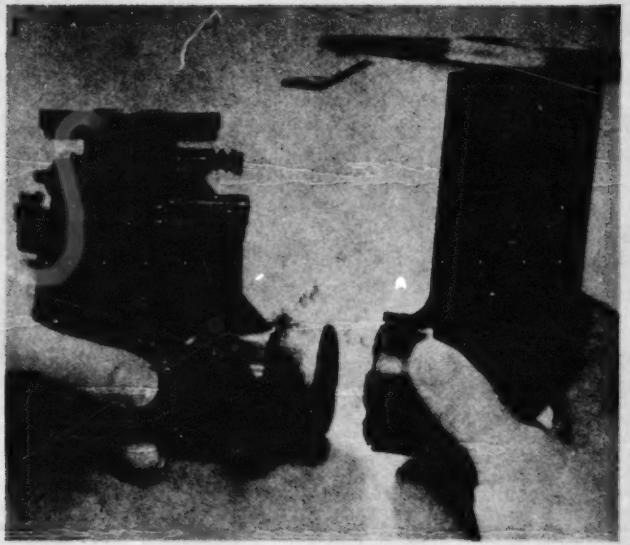
42. Back off the idle valve 3/4 turn.



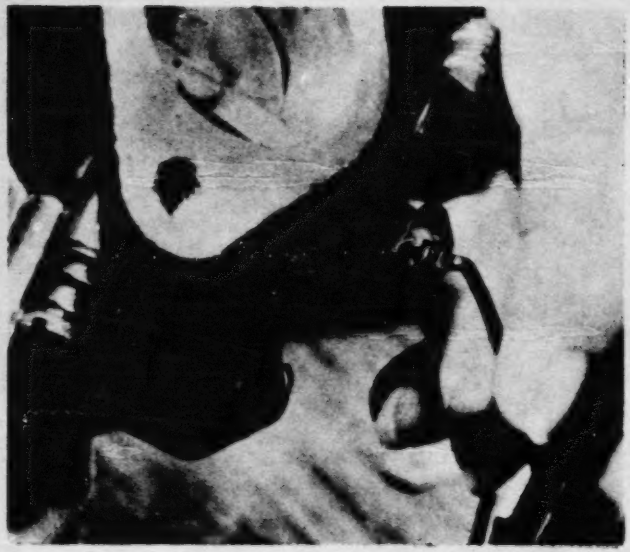
43. Replace the packing nut with the high speed needle valve in it. Seat the high speed needle valve.



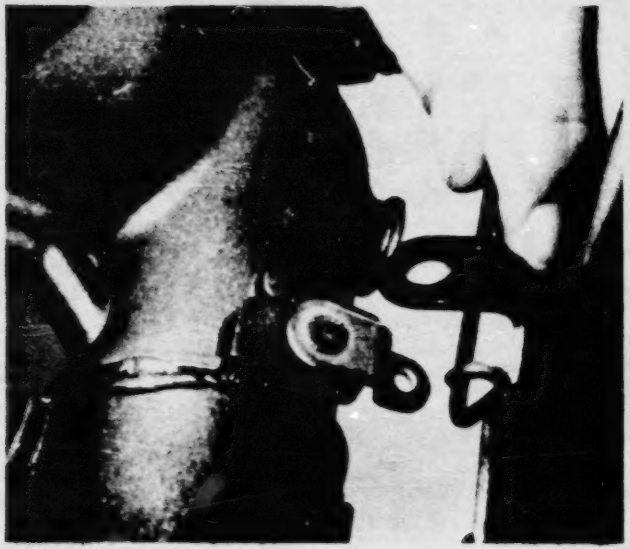
44. Back off the high speed needle valve 1 1/2 turns. Do not tighten the packing nut.



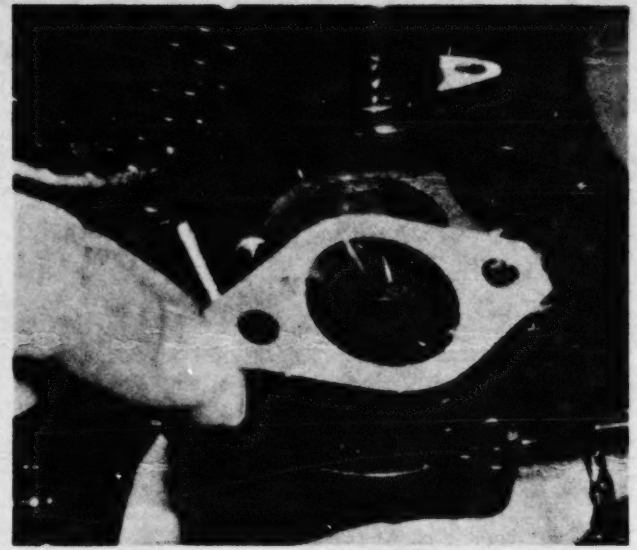
45. Push the air cleaner tube onto the carburetor.



46. Hook the automatic choke link on the choke valve.

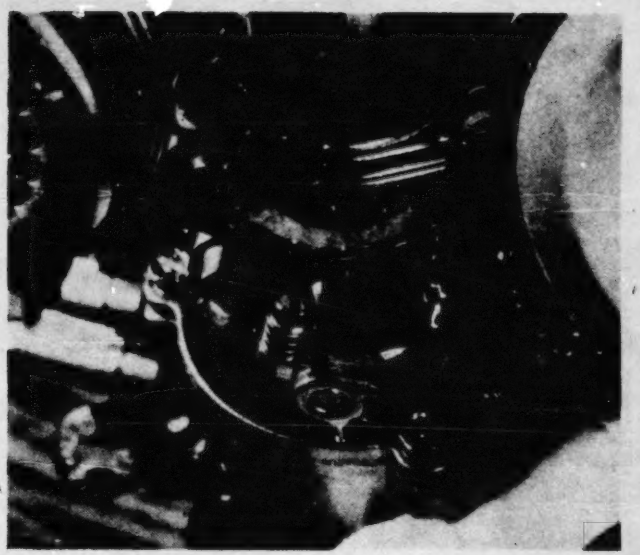


47. Tilt the carburetor near the engine and hook the governor link onto the throttle shaft.

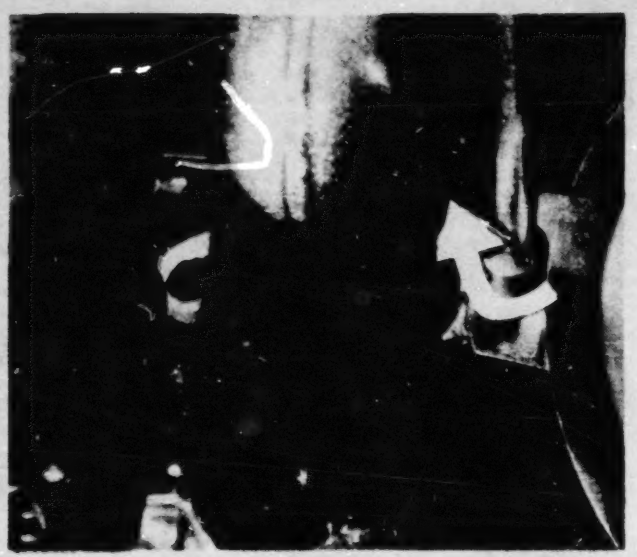


48. **Place a new intake manifold gasket on top of the carburetor.**

Caution: Be careful not to tear this gasket when replacing the carburetor.

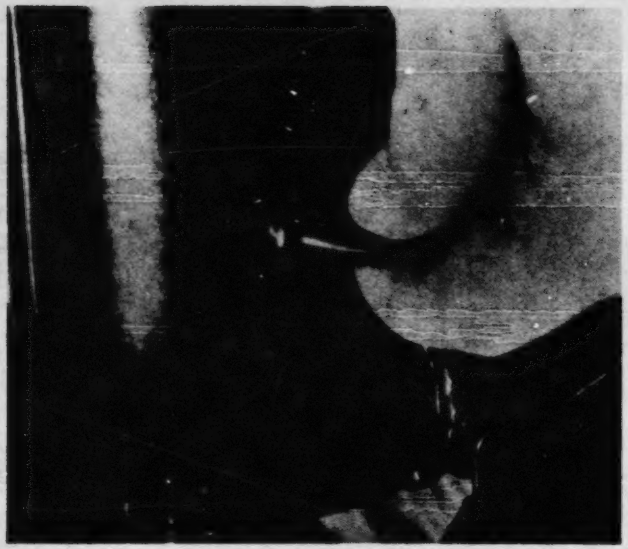


49. Fit the carburetor under the intake manifold, making sure the gasket stays in place.

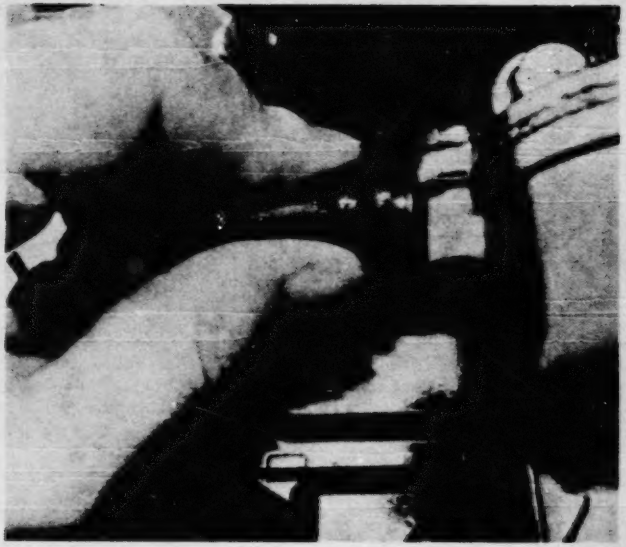


50. Tighten the 2 mounting screws on the intake manifold with a Phillips screwdriver.

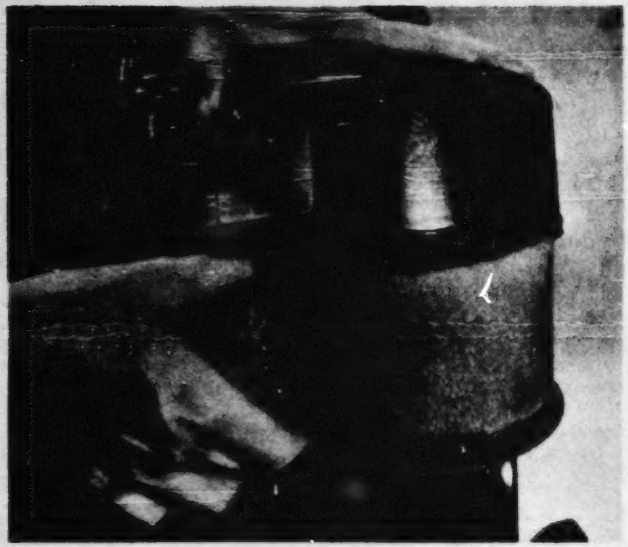
51. Replace the bolt and brace on the bottom of the carburetor with the 7/16" open-end wrench.



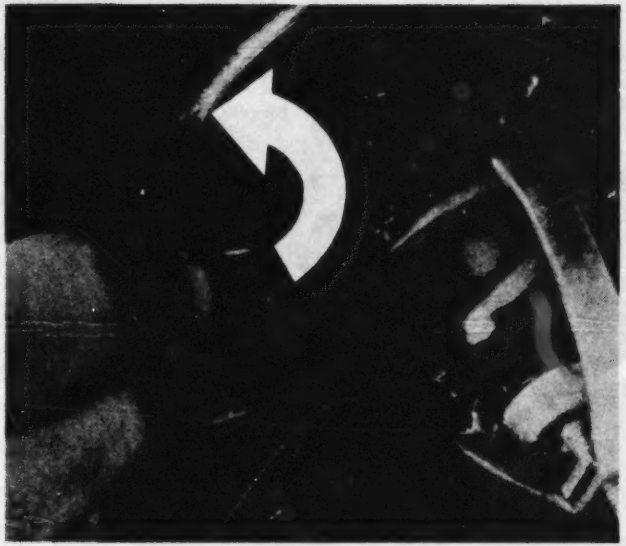
52. Push the crankcase breather hose into the air cleaner tube.



53. Push the fuel hose onto the carburetor. Use the pliers to fit the hose clamp over the fuel hose and carburetor.



54. Replace the air cleaner element, cover, and wing nut.



55. Open the fuel shutoff valve. Check the carburetor for leaks.

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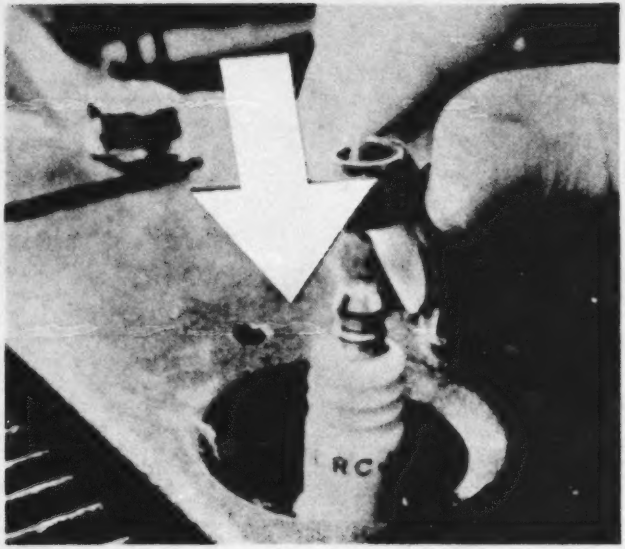
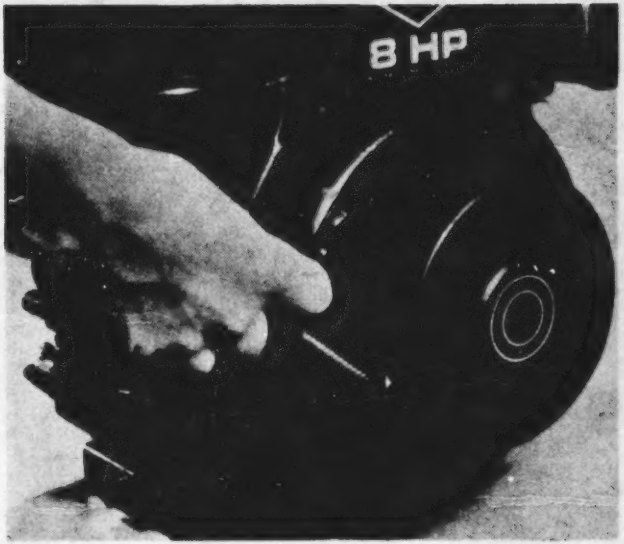
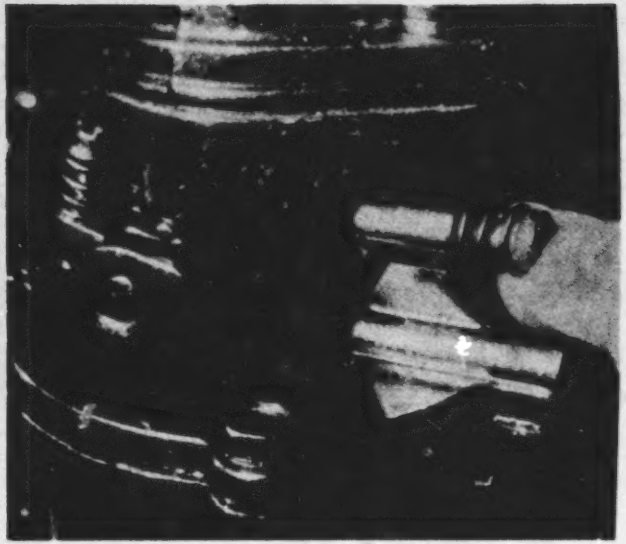


56. Replace the spark plug, spark plug wire, and throttle cable.

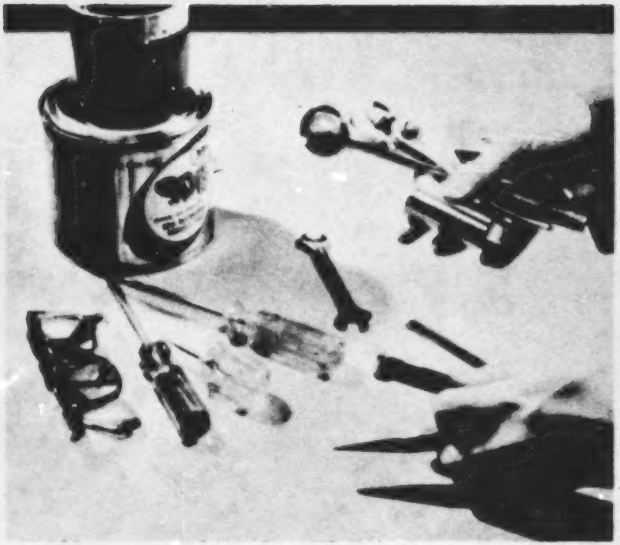


57. Crank the engine and let it run for about 2 minutes.



58. Adjust the carburetor until the engine idles smoothly and then accelerates to half speed without hesitation or sputtering.

Caution: Don't let the engine run at its highest speed because this could damage the moving parts inside.



59. Clean up your work area and return the tools to the tool room. You are now finished with this job.

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CAN YOU SERVICE THE TWO-PIECE FLO-JET CARBURETOR?

Practice doing this job each day and fill in the chart on the next pages. Use a rating number below that describes how well you can do the steps of the job. By the end of 10 days you will see your progress.

RATING	MEANING
1 =	Can do simple parts of this job, but still needs to be shown how to do most of it.
2 =	Can do most parts, but may need help on hard parts.
3 =	Can do all parts without help. Ready for job entry with shop supervision.

CHART FOR CAN YOU SERVICE THE TWO-PIECE FLO-JET CARBURETOR?	DAYS									
	1	2	3	4	5	6	7	8	9	10
1. Assembles and uses tools correctly										
2. Prepares engine to remove carburetor (Steps 1-2)										
3. Removes hoses and air cleaner (Steps 3-6)										
4. Disconnects carburetor from intake manifold, governor link, choke link, and air cleaner tube (Steps 7-11)										
5. Checks upper carburetor body for warpage (Steps 12-13)										

CHART FOR CAN YOU SERVICE THE TWO-PIECE FLO-JET CARBURETOR?	DAYS									
	1	2	3	4	5	6	7	8	9	10
6. Checks throttle shaft and bushings for wear (Steps 14-17)										
7. Removes idle and high speed needle valves and checks them for damage and wear (Steps 18-20)										
8. Removes main fuel nozzle and checks it for dirt and damage (Steps 21-22)										
9. Separates upper and lower carburetor bodies (Steps 23-24)										
10. Removes float and checks it for leaks (Steps 25-26)										

CHART FOR CAN YOU SERVICE THE TWO-PIECE FLO-JET CARBURETOR?	DAYS									
	1	2	3	4	5	6	7	8	9	10
11. Replaces float valve, gasket, and checks float valve seat (Steps 27-29, 34)										
12. Cleans carburetor parts (Steps 30-33)										
13. Assembles float to upper carburetor body, checks the float level, and adjusts it (Steps 34-37)										
14. Reassembles upper and lower carburetor bodies, main fuel nozzle, idle and high speed needle valves (Steps 38-44)										

CHART FOR CAN YOU SERVICE THE TWO-PIECE FLO-JET CARBURETOR?	DAYS									
	1	2	3	4	5	6	7	8	9	10
15. Connects air cleaner tube, and choke and governor links to carburetor (Steps 45-47)										
16. Places new gasket on carburetor and reconnects it to intake manifold (Steps 48-51)										
17. Replaces hoses and air cleaner to carburetor (Steps 52-54)										
18. Prepares engine for starting; starts engine, and makes carburetor adjustments (Steps 55-58)										
19. Cleans work area and replaces tools (Step 59)										